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Adams, director of the station, on Oneida Lake, and in the Palisades Interstate Park. The surveys, which in the past have been conducted by the department of forest zoology, have been taken over by the Roosevelt Wild Life Station and will be conducted in the main under its auspices.

DR. MABEL L. ROE, who resigned in July as assistant plant pathologist in the Kentucky Agricultural Experiment Station, has recently accepted an appointment as seed analyst in the Dickinson Seed Company, Chicago.

MR. F. W. GLADING, of the Bureau of Standards, has resigned to become industrial engineer for the Baldwin Locomotive Works, at Philadelphia, Pennsylvania.

THE annual dinner of the New York Academy of Sciences and its affiliated societies will be held at seven in the evening, Monday, December 15, 1919, at the Delta Kappa Epsilon Club, 30 West 44th Street. The dinner will be followed by the annual meeting of the academy, to receive reports and elect officers and fellows for 1920. The presidential address will be delivered by Dr. Ernest Ellsworth Smith, on "Applied science and the war." After the president's address there will be given two illustrated talks, as follows: Professor Douglas W. Johnson, on "A geographer at the front and at the Peace Conference," and Professor Henry E. Crampton, on "Tahiti and the South Seas."

At a meeting held on November 25 in the main auditorium of the New National Museum, Washington, D. C., Professor Irving Fisher, of Yale University, addressed members of the Scientific-Technical Section of the Federal Employees Union and their friends on "The purchasing power of salaries." Professor Fisher elaborated his theory of a stabilized dollar, claiming that an invariable unit of value is of even greater importance than invariable units of other quantities, such as length, weight, etc. The section voted to appoint a committee for a study of the proposal with instructions to report back a resolution granting or withholding endorsement according to the findings of the committee.

It is announced that unavoidable circumstances necessitate a change in the meeting place of The Federation of American Societies for Experimental Biology. The meeting will be held at Cincinnati, Ohio, December 29, 30 and 31, instead of at Toronto.

MRS. MARY CLARK THOMPSON has presented to the National Academy of Sciences a fund amounting to \$10,000, the income of which is to be applied to a gold medal of appropriate design, to be awarded annually by the academy for the most important services to geology and paleontology. The medal is to be known as the Mary Clark Thompson Gold Medal. Mrs. Thompson previously gave an additional \$1,000 for the preliminary expenses of dies.

A UNITED STATES Civil Service examination for superintendent in the Bureau of Fisheries will be held on December 30, 1919. A vacancy at the Key West, Florida, Biological Station of the Bureau of Fisheries, at \$1,800 a year and vacancies in positions requiring similar qualifications, will be filled from this examination.

UNIVERSITY AND EDUCATIONAL NEWS

DR. DAVID P. BARROWS, professor of education and later of political science in the University of California, at one time director of education for the Philippine Islands and author of works on the islands, has been elected president of the University of California, to succeed Dr. Benjamin Ide Wheeler.

DR. HORACE G. BYERS, formerly of the University of Washington, who was recently appointed chemist in charge of soil investigations in the Bureau of Soils, has accepted the position of head of the department of chemistry at Cooper Union Institute, New York City.

DR. WALTER H. EDDY, who during the war was a major in the Sanitary Corps and served first as assistant director and later as director of the food and nutrition department of the A. E. F., has been appointed a member of the faculty of practical arts of Teachers College, Columbia University, in charge of physiological chemistry.

DR. ERNEST WILLIAM GOODPASTURE has been appointed assistant professor of pathology at the Harvard Medical School.

MR. R. S. TROUP, assistant inspector-general of forests, India, has been elected professor of forestry at Oxford.

At the University of Lyons, Dr. Mouriquand has been appointed professor of general pathology and therapeutics in place of Professor Lesieur, deceased, and Dr. Policard has been appointed professor of general anatomy and histology in place of Professor Renaut, who has retired from active service.

DISCUSSION AND CORRESPONDENCE

AN UNUSUAL FORM OF RAINBOW

THE following is an account of a rainbow which, although probably simple enough in theory, was entirely new to the writer and seems to be worthy of record. The refracting spheres were neither falling raindrops nor drops suspended in air. They were drops resting on the surface of a lake but kept from breaking through the lake surface by a surface tension effect. They probably resulted from a fog which had hung over the lake during the night and persisted longer than usual after sunrise. The morning was unusually calm, and no ripples had yet appeared on the lake. The floating drops gave the surface an appearance like that caused by a scum, but close examination showed the individual drops quite distinctly and also showed that the light of the bow undoubtedly came from them, for part of the bow came quite close to the observer.

The bow was seen about nine o'clock according to the daylight-saving bill, or eight by the usual local railroad time. Its appearance was about as shown in the accompanying figure. *AB* is the western shore-line of the lake, about 200 yards away. The bow was complete except in the following particulars: the part near *S* was hidden by the shadow of the observer and that of the boat in which he sat; and the part *PRQ* was inverted, like a reflection of what should have been the crest, the part near *R* being somewhat less bright than the rest. The ends of this inverted portion seemed to meet

the ends of the larger arc at the shore-line, but there is no reason why such an accidental line should determine the intersection of the two

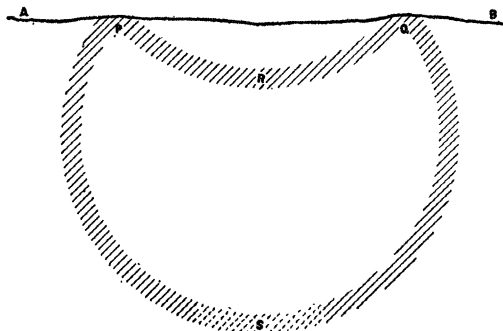


FIG. 1.

branches. Probably they should meet at the horizon. Owing to the closeness of the observer's eye to the water-level, and the distance of the shore-line, the latter would differ in angular position very slightly from the true horizon. Though the bow was very brilliant, no trace of a second bow was visible.

The obvious explanation of the inverted portion is that it is formed by reflection in the lake surface, either directly before or directly after the light passes through the drop. If the light enters the top of the drop and is afterward reflected from the lake-surface, the reflected ray will clear the drop if the elevation of the sun is greater than $21^{\circ}.6$. If it is first reflected from the lake and then enters the drop at the angle of incidence proper to give rise to minimum deviation, the sun's elevation must be less than $20^{\circ}.4$ in order for the incident ray to clear the drop. These figures are calculated on the assumptions that the drop is spherical, that it rests on the surface, and that the angle of the bow is that given by the elementary rainbow theory.

H. M. REESE

UNIVERSITY OF MISSOURI

A SIMPLE DEVICE FOR ILLUSTRATING OSMOSIS

THE difficulty of preparing a "leak-proof" apparatus to demonstrate osmosis by the use of parchment and thistle tube, led me, last